

cleus subdivided into spherical granules of refractive matter, still circumscribed by their proper membrane within the capsule; (e) nucleolus within this proper capsule which sometimes appears as a disk of protoplasm, at others as an oil-globule, and at others in a state of minute granulation.

- Fig. 95. Nucleus of *Actinophrys oculata* after Stein (tab. 5. figs. 25-28. *op. cit.*), to compare with the nucleus and plasmic zone just described: (a) "Markssubstanz;" (b) "nucleus."
- Fig. 96. Rhizopodous cell of Characeæ under arrest (?) of generative development: (a) plasmic zone reduced to a membranous (?) state and presenting a number of pouches on its surface; (b) granules still within the capsule of the nucleus.
- Fig. 97. Ditto, with capsule of the nucleus empty, and its refractive granules in the pouches of the mulberry-shaped plasmic membrane.
- Fig. 98. The mulberry-shaped plasmic membrane, &c. of the foregoing figure isolated.

XXII.—*Descriptions of one Indian and nine new Burmese Helices; and Notes on two Burmese Cyclostomacea.* By W. H. BENSON, Esq.

1. *Helix pylaica*, n. s., nobis.

Testa obtecte perforata vel imperforata, depresso-conoidea, solidiuscula, nitente, superne radiato-costulata, subtus læviori, costulis evanescentibus, cornea, spira depressa, apice obtuso, sutura impressa; anfractibus  $6\frac{1}{2}$  lente accrescentibus, angustis, ultimo antice vix descendente, subtus convexo, ad periophalum excavato; apertura transversa, angusta, lunato-lineari dente unica elongata parietali, lamelliformi, alba, coarctata; peristomate incrassato, obtuso, edentulo, albo, intus strictiusculo, margine externo infra angulum periphærii sinuato.

Diam. major 9, minor 8, axis 5 mill.

Hab. ad Maulmain. Teste W. Theobald.

This and the following shells were collected by Mr. W. Theobald, jun. It presents a singular resemblance to the North American *H. hirsuta*, Say, in the form of the aperture and the structure of the parietal plait; but there is no disposition to form teeth on the basal callus as in that shell. It must be included in the division *Tridopsis* of Beck, of which *H. hirsuta* and the Burmese *H. infrendens*, Gould, form a part. A still nearer approach to the latter species will be found below in *H. capessens*.

2. *Helix artificiosa*, n. s., nobis.

Testa anguste umbilicata, orbiculata, discoidea, nitidiusecula, superne liris confertis sulcisque profundis spiralibus, costulisque confertis obliquis decussata, subtus liris remotioribus striisque radiatis ornata, pallide cornea, spira planulata, interdum omnino planata, apice vix

elevato, obtuso, sutura profunda; anfractibus  $6\frac{1}{2}$  angustis, lente accrescentibus, ultimo superne subangulato, subtus convexiusculo; apertura sub-anguste lunata, obliqua; peristomate acuto, leviter sinuato, margine columellari brevissimo, basaliq̄ue expansiusculo, dextro crenulato.

Diam. major 14, minor 12, axis 5 mill.

*Hab.* ad Phie Than vallis Tenasserim. Teste W. Theobald.

The sculpture of this discoid species is very elaborate, and strongly pronounced in proportion to the size of the shell, presenting a very beautiful appearance under the lens. The ends of the spiral liræ give a scalloped edge to the outer lip.

### 3. *Helix capessens*, n. s., nobis.

Testa imperforata, depresso-conoidea, superne radiatim costulato-striata, subtus læviori, rufo-cornea; spira subconoidea, apice obtusiusculo, sutura impressa; anfractibus  $6\frac{1}{2}$  convexiusculis, lente accrescentibus, ultimo acute carinato, antice leviter depresso, subtus convexiusculo, ad periomphalum excavato; apertura transversa, angusta, dentibus 3 basalibus æqualibus coarctata, margine recto, obtuso, vix sinuato.

Diam. major 9, minor 8, axis 4 mill.

*Hab.* ad Maulmain. Teste W. Theobald.

Nearly related to *H. infrendens*, Gould, which was found by Mr. Theobald at the Kangoon Caves on the Salween River, but easily distinguished by its more depressed form, keeled periphery, and the more regular dentition of the basal margin. The profile of the spire is less convex, and the last whorl is depressed in front below the level of the keel of the penultimate whorl, whereas in *H. infrendens* it ascends at the same part. *H. capessens* forms, with *H. pylaica*, a notable addition to the restricted section *Tridopsis*.

### 4. *Helix convallata*, n. s., nobis.

Testa vix perforata, convexo-depressa, tenui, nitidissima, radiato-striata, translucēte, olivaceo-cornea; spira convexiuscula, apice prominulo obtuso, sutura profunde canaliculata; anfractibus 6 convexis, lente accrescentibus, prope suturam acute angulatis, ultimo rotundato, non descendente, subtus convexiusculo; apertura vix obliqua, lunata; peristomate acuto, superne prope suturam angulato, antrorsum leviter arcuato, margine columellari oblique descendente, expansiusculo.

Diam. major 14, minor  $11\frac{1}{2}$ , axis vix 7 mill. Apert. lata 7, alt. 5 mill.

*Hab.* ad collem Therabuin vallis Tenasserim. Detexit W. Theobald.

Singular among the allies of *Helix vitrinoides* on account of the excavated canaliculate suture with a carinate margin.

5. *Helix Hariola*, n. s., nobis.

Testa perforata, subturbinata, tenui, oblique striatula, striis minutissimis confertissimis spiralibus sub lente ornata, non nitente, diaphana, purpureo-cornea, strigis opacis, albis, laciniatis, fascias duas latas efformantibus, picta; spira conoidea, apice obtuso, sutura impressa; anfractibus  $4\frac{1}{2}$  convexiusculis, ultimo ad periphæriam obtuse angulato; apertura obliqua, late lunata; peristomate tenui, albido, margine dextro, basaliq̄ue expanso, columellari laminam triangularem dilatam, umbilicum subtegentem efformante.

Diam. major 15, minor 13, axis  $10\frac{1}{2}$  mill. Apert.  $6\frac{1}{2}$  mill. longa, 8 lata.

*Hab.* ad Thyet Myo, prope ripas Irawadi fluvii. Detexit W. Theobald.

The interspace between the opaque bands forms a dark girdle below the angle, and the periomphalus is similarly coloured. The shell is more depressed in form and destitute of a keel, but singularly like the rare *H. Capitium*, Bens., in colouring. Since the discovery of the latter species by Capt. Boys, at the foot of the Rajmahal Range near Sikrigali, it has not been met with by any naturalist in that quarter; but an imperfect specimen of a very rare *Helix* met with by Mr. Theobald in the hills above Cuttack, 400 miles to the southward of its original habitat, proves to be a young *H. Capitium*.

6. *Helix bifoveata*, n. s., nobis.

Testa umbilicata, oblato-globosa, utrinque concava, oblique striata, minutissime granulata, luteo-fusca, translucente; spira profunde excavata, perspective umbiliciformi; anfractibus  $4\frac{1}{2}$  angustis, convexis, recedentibus, ultimo prominente, superne compresso, globoso, cæteros occultante, subtus circa umbilicum mediocrem perspectivum compresso angulato; apertura verticali longissima utrinque testam superante, angustissime lunata, superne et infra subangulata; peristomate simplici, acuto, expansiuseculo, marginibus remotis convergentibus, columellari brevi subverticali, leviter expanso.

Diam. major 10, minor 9, axis 6 mill. Long. apert. 7, lat. vix 2 mill.

*Hab.* ad collem Therabuin vallis Tenasserim raro. Detexit W. Theobald.

This is the most singular among the planorbular *Helices* which exhibit a concavity, and, as it were, an umbilicus on the spiral, as well as the basal face of the shell. The parietes of the true or basal umbilicus are more vertical than those of the spiral depression, and the excavation is deeper. The sculpture is peculiar, consisting of lines of granules crossing each other obliquely.

The published species most nearly related to *H. bifoveata* are *H. Omicron*, Pfr., *H. Shuttleworthi*, and *H. Calculus*.



7. *Helix pansa*, n. s., nobis.

Testa perforata, conoideo-depressa, confertim oblique striata, subtus nitida, radiatim striatula, translucente, fusco-cornea; spira convexo-conoidea, apice prominulo, glabro, nitido, sutura leviter impressa; anfractibus 6 lente accrescentibus, convexiusculis, ultimo ad periphæriam subcarinato, subtus convexiusculo; apertura obliqua, late lunata; peristomate recto acuto, margine columellari oblique descendente, superne breviter reflexo.

Diam. major 14, minor 13, axis  $6\frac{1}{2}$  mill. Apert. 5 longa, 7 lata.

*Hab.* ad Akaouktoung prope ripas Irawadi fluminis. Detexit W. Theobald.

Allied to the Sikkim form, *Helix tugurium*, nobis.

8. *Helix Bolus*, n. s., nobis.

Testa subaperte perforata, globosa, tenui, oblique striatula, striis minutissimis confertissimis spiralibus, sub lente, sculpta, nitidula, translucente, pallide cornea, interdum fascia unica rufa supra periphæriam ornata; spira conoidea, apice obtusiusculo, sutura leviter impressa; anfractibus 5 convexiusculis, ultimo inflato; apertura vix obliqua, rotundato-lunari; peristomate tenui, expansiusculo, albido, margine columellari latiori, superne perforationem subtegente.

Diam. major 14, minor 12, axis  $10\frac{1}{2}$  mill.

„ „  $15\frac{1}{2}$ , „ 14, „  $11\frac{1}{2}$  „

Apert. majoris 9 mill. longa, 8 lata.

*Hab.* ad Prome. Detexit W. Theobald.

This shell varies in being more or less globose in the last whorl, some specimens presenting a subturbinate appearance. The band is indifferently present or absent in each variety.

9. *Helix textrina*, n. s., nobis.

Testa perforata, depressa, superne lineis radiatis et spiralibus rugose decussata, pallide rufescente, subtus læviori, lactea; spira planiuscula, apice obtuso, sutura leviter compressa; anfractibus  $5\frac{1}{2}$  subplanulatis, sensim accrescentibus, ultimo supra periphæriam angulato; apertura late lunari; peristomate acuto, vix expansiusculo, margine columellari oblique descendente, superne brevissime reflexo.

Diam. major 29, minor 25, axis vix 13 mill. Apert. 15 mill. lata, 10 alta.

*Hab.* ad Thyet Myo. Detexit W. Theobald.

Allied to *H. labiata*, Pfeiffer, a Western Himalayan shell, but differing in its more depressed form, peculiar sculpture, like that of the upper part of *H. ligulata*, by its more widely lunate aperture, and by the absence of any true labiation. The colour may be more pronounced in fresher specimens.

The spire is more depressed and the apex less prominent than in *H. Theodori*, Phil.; the shell also is more solid, the aperture wider, and the columellar lip descends more horizontally.

10. *Helix Laidlayana*, n. s., nobis.

Testa constricta perforata, sinistrorsa, turbinato-depressa, tenui, oblique striata, striis confertissimis spiralibus decussata, nitidiuscula, translucida, albida, fascia 1 supra angusta, rufo-castanea, periphæriam tangente, interdum 1 supra lata, et altera infra remotiuscula ornata; periomphalo et pariete aperturali castaneis; spira depresso conoidea, apice obtusiusculo, sutura leviter impressa; anfractibus 5 sensim accrescentibus, ultimo ad periphæriam angulato, antice breviter descendente, subtus convexo; apertura valde obliqua, subquadrato-lunata; peristomate recto, acuto, margine columellari subrecte descendente, anguste reflexo, perforationem constrictam subtegente.

Diam. major 27, minor 23, axis 15 mill. Apert. 15 mill. lata, 13½ alta.

*Hab.* in Provincia Bengalensi Bheerbhoom, ubi exemplum unicum junius detexit J. W. Laidlay; nuperrime in Provincia Orissæ, non procul ab urbe Cuttack, exempla majora non raro invenit W. Theobald.

Named after a former Secretary of the Asiatic Society of Calcutta, to whom I am indebted for a specimen found by him many years ago in the region of the late Santhal insurrection. The rediscovery of the shell in about 20° N. lat., as well as the detection of *H. Capitium* in the same quarter, shows that these species range through nearly 5 degrees of latitude. The colouring of *H. Laidlayana* has much resemblance to that of *H. quasita*, Fér., but the shell has nearer relations to *H. interrupta*, nobis, and *H. trifasciata*, Müll. It differs from *H. interrupta* in colour, depressed form, greater number of whorls, contracted perforation, descent of the last whorl above the aperture, and in the disposition of the bands. When a single broad dark band is present in *interrupta*, it touches the angulate periphery. From *H. 3-fasciata* it differs in lustre, less depressed form, want of solidity, contracted perforation, more vertical columellar lip, and in the disposition of the bands, that which is above the periphery in *3-fasciata* never touching the angle. The colour of the periomphalus and parietes of the aperture is also peculiar.

Among the known Burmese *Helices*, *H. Achatina*, Gray (*anguina*, Gould), var.  $\beta$ , Pfr., was taken by Mr. Theobald at Maulmain, and at the Kangoon Caves on the Salween River. A small variety of *H. refuga*, Gould, occurred at Kwadouk, near Thyet Myo, on the Northern Frontier, and an interesting dex-

trorse variety at Phie Than in the Tenasserim Valley. A fragment of *H. Saturnia*, Gould, was also sent from that valley, where *H. retrorsa* and *anceps*, Gould, were found abundantly, and *H. Theodori*, Phil., very sparingly. A shell, apparently referable as a variety to the Darjiling *H. Castra*, nobis, was once met with at Pyä, between Maulmain and Tavoy. *Helix Merguiensis*, Ph., *H. gabata*, Gould, a small var. of *H. delibrata*, nobis (*procumbens*, Gould), and *H. honesta*, Gould, occurred both at Maulmain and in the valley of the Tenasserim River, where *H. resplendens*, Ph., was not rare. The widely spread *H. similaris*, Fér., is noted from Thyet Myo and Prome, on the river Irawadi, and a sharply-keeled variety of *H. rotatoria*, V. d. Busch, hitherto supposed to be peculiar to Java, inhabits the banks of the same river, lower down, at Akaouktoung. None of the *Helices*, described by Gould or others from the former dominions of the Burmese Empire, appear to have escaped the researches of Mr. Theobald, who has added largely to the list, several other species of *Helix* remaining to be described.

*Rhaphaulus* (*Anaulus* and *Megalomastoma*) *Chrysalis*, Pfr., from Maulmain, in a more perfect condition than the type specimen, shows a much longer tube running up the penultimate whorl than either *bombycinus* or *Lorraini*, Pfr., and its colour is a rich chestnut. A dead specimen of *Megalomastoma sectilabre*, Gould, from Yanglaw on the Tenasserim River, confirms an opinion communicated last year to Pfeiffer, and derived from Gould's and Mason's observations, and from a view of Pfeiffer's supposed specimen of *sectilabre* from Borneo, that, although allied to, it was quite distinct from my Bornean *M. Anostoma*, with which Pfeiffer had believed it to be identical. The channel in *M. Anostoma* (Annals, 1852, vol. x. p. 269-270) is on the inner lip, as in *M. altum*, Sow. In *sectilabre* it appears on the right lip, near the top of the aperture. The latter is a more solid shell, with the spire more slender and longer in proportion; the suture is distinctly marginate; the peristome is white (not coloured, as in *M. Anostoma*), and presents a contrast with the orange-chestnut interior of the aperture; the apex also is not pale or white, as in the Bornean species.

Cheltenham, 30th July 1856.

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XXIII.—On an Abnormality in the Flowers of *Salix Andersoniana*. By JOHN LOWE, Esq.\*

IN the year 1841, the Rev. J. E. Leefe communicated to this Society a paper, entitled "Remarks on some curious Metamor-

\* Read to the Edinburgh Botanical Society, July 10th, 1856.